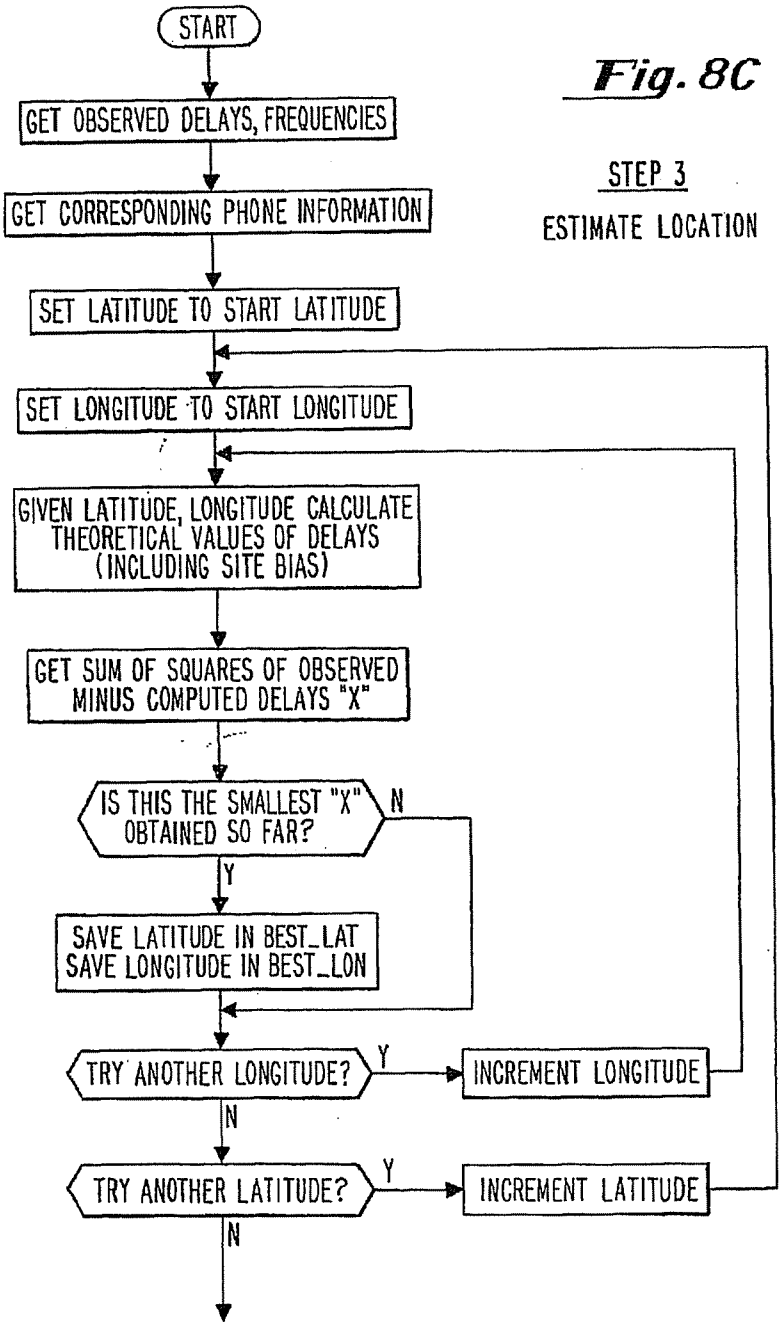

Fig. 8C

STEP 3

ESTIMATE LOCATION

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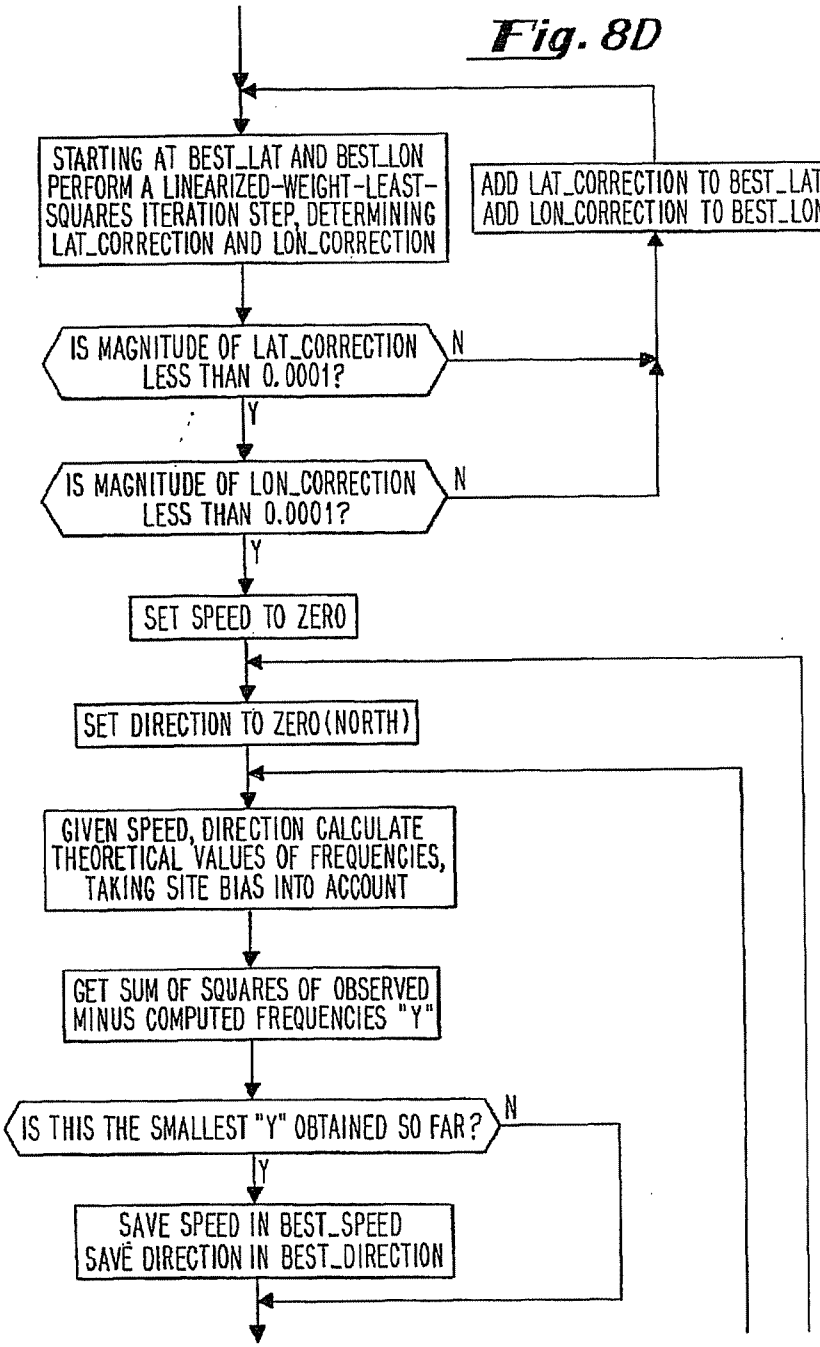
Fig. 8D



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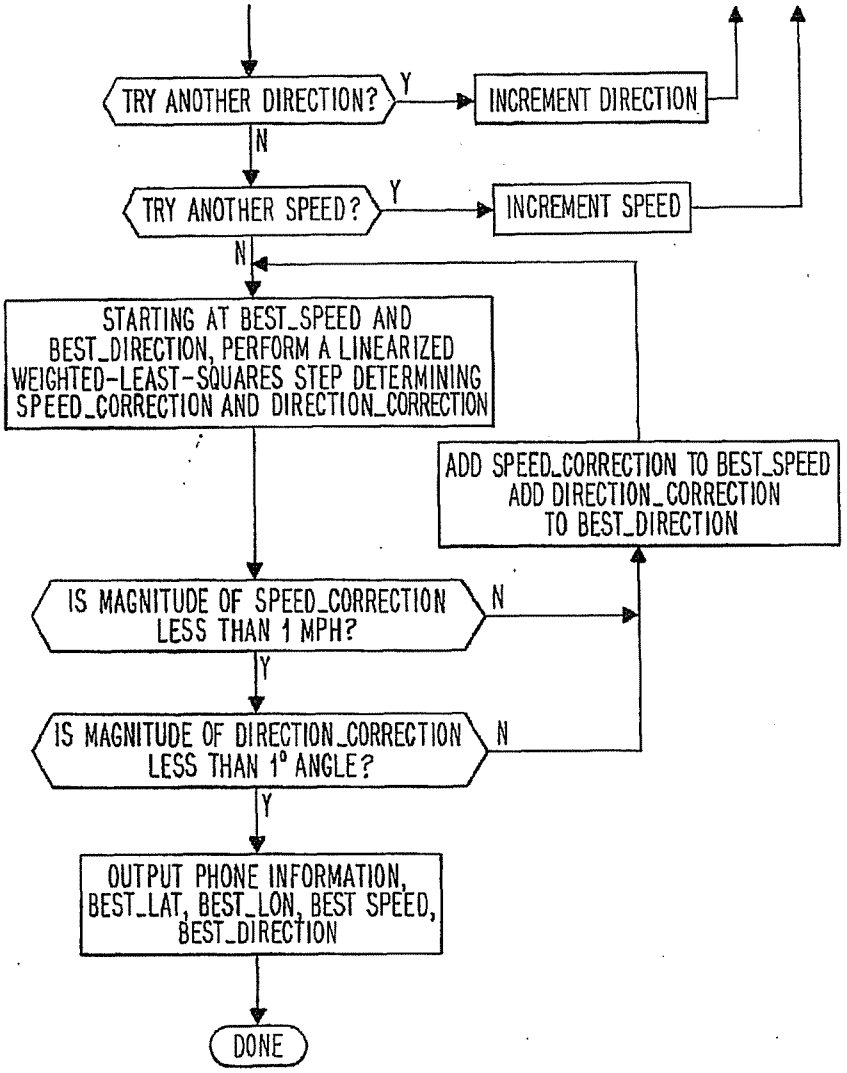

Fig. 8E

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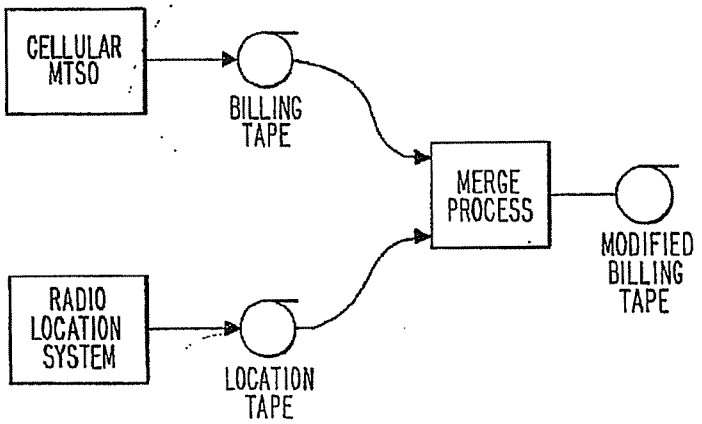

Fig. 9

Applicant: Louis A. Stilp; Curtis A. Knight; John C. Webber

Serial or Patent No.: Not Yet Assigned
Attorney's Docket No.: ACOM-0001

Date Filed: Herewith

For: CELLULAR TELEPHONE LOCATION SYSTEM

VERIFIED STATEMENT (DECLARATION) CLAIMING SMALL ENTITY STATUS (37 CFR 1.9(f) and 1.27(c) - SMALL BUSINESS CONCERN

I hereby declare that I am:

( ) the owner of the small business concern identified below:

(X) an official empowered to act on behalf of the concern identified below:

NAME OF CONCERN: Associated RT, Inc.
ADDRESS OF CONCERN: 200 Gateway Towers, Pittsburgh, PA 15222

I hereby declare that the above-identified small business concern qualifies as a small business concern as defined in 13 CFR 121.12, and reproduced in 37 CFR 1.9(d), for purposes of paying reduced fees under section 41(a) and (b) of Title 35, United States Code, in that: (1) the number of employees of the concern, including those of its affiliates, does not exceed 500 persons; and (2) the concern has not assigned, granted, conveyed, or licensed, and is under no obligation under contract or law to assign, grant, convey, or license, any rights in the invention to any person who could not be classified as an independent inventor if that person had made the invention, or to any concern which would not qualify as a small business concern or a nonprofit organization under this section.
For purposes of this statement, (1) the number of employees of the business concern is the average over the previous fiscal year of the concern of the persons employed on a full-time, part-time or temporary basis during each of the pay periods of the fiscal year, and (2) concerns are affiliates of each other when either, directly or indirectly, one concern controls or has the power to control the other, or a third party or parties controls or has the power to control both.

I hereby declare that rights under contract or law have been conveyed to and remain with the small business concern identified above with regard to the invention entitled **CELLULAR TELEPHONE LOCATION SYSTEM** by inventor(s) **Louis A. Stilp; Curtis A. Knight and John C. Webber** described in

(xx) specification filed herewith.

( ) application serial no. ____, filed ____.

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( ) patent no. ____, issued ____.

If the rights held by the above-identified small business concern are not exclusive, each individual, concern or organization having rights in the invention is listed below* and no rights to the invention are held by any person, other than the inventor, who would not qualify as an independent inventor under 37 CFR 1.9(c) if that person made the invention, or by any concern which would not qualify as a small business concern under 37 CFR 1.9(d), or a nonprofit organization under 37 CFR 1.9(e).

***NOTE: Separate verified statements are required for each named person, concern or organization having rights to the invention averring to their status as small entities. (37 CFR 1.27)**

FULL NAME:
ADDRESS:
( ) INDIVIDUAL ( ) SMALL BUSINESS CONCERN ( ) NONPROFIT ORGANIZATION

FULL NAME:
ADDRESS:
( ) INDIVIDUAL ( ) SMALL BUSINESS CONCERN ( ) NONPROFIT ORGANIZATION

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 CFR 1.28(b))

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

NAME OF PERSON SIGNING Scott Bruce
TITLE OF PERSON SIGNING Associated RT, Inc.
ADDRESS OF PERSON SIGNING

SIGNATURE

5/5/93
DATE

A106

DOCKET NO.: ACOM-0001 PATENT

COMBINED DECLARATION AND POWER OF ATTORNEY

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name; and

I verily believe that I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled: CELLULAR TELEPHONE LOCATION SYSTEM the specification of which:

(X) is attached hereto.

( ) was filed on _____ as Application Serial No. _____ and was amended on _____ (if applicable).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose to the U.S. Patent and Trademark Office all information known to be material to the patentability of this application in accordance with 37 CFR § 1.56.

I hereby claim foreign priority benefits under 35 U.S.C. § 119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of any application on which priority is claimed:

Country	Number	Date Filed	Priority Claimed
_____	_____	_____	___
_____	_____	_____	___
_____	_____	_____	___

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I hereby claim the benefit under 35 U.S.C. § 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of 35 U.S.C. § 112, I acknowledge the duty to disclose to the U.S. Patent and Trademark Office all information known to be material to patentability as defined in 37 CFR § 1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application:

Application Serial No.	Filing Date	Status (patented, pending)

30 over

I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith: **Albert W. Preston, Jr.** and **Michael D. Stein**, Registration Nos. 25,366 and 34,734 of the firm of **WOODCOCK WASHBURN KURTZ MACKIEWICZ & NORRIS**, One Liberty Place - 46th Floor, Philadelphia, Pennsylvania 19103, and

Address all telephone calls and correspondence to:

Albert W. Preston, Jr.
WOODCOCK WASHBURN KURTZ MACKIEWICZ & NORRIS
One Liberty Place - 46th Floor
Philadelphia, PA 19103
Telephone No. **215-568-3100.**

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the

United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

1	Full Name Louis A. Stilp	Inventor's Signature Louis A Stilp	Date 5/5/93
	Residence 203 Cranbourne Drive, Broomall, PA 19008	Citizenship USA	
	Post Office Address 203 Cranbourne Drive, Broomall, PA 19008		
2	Full Name Curtis A. Knight	Inventor's Signature Curtis A Knight	Date 6 May 93
	Residence 2022 Columbia Road N.W., #610, Washington, D.C. 20009	Citizenship USA	
	Post Office Address ~~2033~~ 2022 Columbia Road N.W., #610, Washington, D.C. 20009		
3	Full Name John C. Webber	Inventor's Signature John C Webber	Date 5/6/93
	Residence 3249 Betsy Lane, Herndon, VA 22071	Citizenship USA	
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4	Full Name	Inventor's Signature	Date
	Residence		
	Post Office Address	Citizenship	
5	Full Name	Inventor's Signature	Date
	Residence	Citizenship	
	Post Office Address		

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DOCKET NO.: ACOM-0001 PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application of:

Louis A. Stilp; Curtis A. Knight; John C. Webber

Serial No.: **Not Yet Assigned** Group No.:

Filed: **HEREWITH** Examiner:

For: **CELLULAR TELEPHONE LOCATION SYSTEM**

Commissioner of Patents & Trademarks
Washington, DC 20231

Sir:

ASSOCIATE POWER OF ATTORNEY

The undersigned, **Michael D. Stein**, Registration No. **34,734**, of the firm WOODCOCK WASHBURN KURTZ MACKIEWICZ & NORRIS, One Liberty Place - 46th Floor, Philadelphia, Pennsylvania 19103, Attorney and/or Agent for Applicant(s), hereby appoints the following:

Robert B. Washburn	Registration No. 16,574
Richard E. Kurtz	Registration No. 19,263
John J. Mackiewicz	Registration No. 19,709
Norman L. Norris	Registration No. 24,196
Dale M. Heist	Registration No. 28,425
Philip S. Johnson	Registration No. 27,200
John W. Caldwell	Registration No. 28,937
Gary H. Levin	Registration No. 28,734
Steven J. Rocci	Registration No. 30,489
Dianne B. Elderkin	Registration No. 28,598
Francis A. Paintin	Registration No. 19,386
John P. Donohue, Jr.	Registration No. 29,916
Henrik D. Parker	Registration No. 31,863
Suzanne E. Miller	Registration No. 32,279
Albert T. Keyack	Registration No. 32,906
Lynn B. Morreale	Registration No. 32,842
Joseph Lucci	Registration No. 33,307
Michael P. Dunnam	Registration No. 32,611
Albert J. Marcellino	Registration No. 34,664
David R. Bailey	Registration No. 35,057
Rebecca R. Gaumond	Registration No. 35,152
John L. Knoble	Registration No. 32,387

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TPI0021603

CONFIDENTIAL
TruePosition, Inc. v. Andrew Corp.
Civil Action No. 05-00747-SLR

Michele K. Herman	Registration No. 35,893
Kevin M. Flannery	Registration No. 35,871
Mark DeLuca	Registration No. 33,229
Joanne Longo Feeney	Registration No. 35,134
Lori Y. Beardell	Registration No. 34,293
John W. Matthews	Registration No. 35,604

his associates with full power to prosecute the above-identified application and to transact all business in the Patent Office connected therewith and requests that correspondence continue to be directed to the firm of WOODCOCK WASHBURN KURTZ MACKIEWICZ & NORRIS at the above address.

Date: May 7, 1993

Michael D. Stein
Attorney and/or Agent of Record
Registration No. 34,734

WOODCOCK WASHBURN KURTZ
MACKIEWICZ & NORRIS
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08/059,242

DOCKET NO.: ACOM-0001 PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application of:

Louis A. Stilp; Curtis A.Knight; John C. Webber

Serial No.: **Not Yet Assigned** Group No.:

Filed: **Herewith** Examiner:

For: **CELLULAR TELEPHONE LOCATION SYSTEM**

I, Michael D. Stein, Registration No. 34,724 certify that this correspondence is being deposited with the U.S. Postal Service as First Class mail in an envelope addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

On 5-7-93

Michael D. Stein Reg. No. 34,724

Commissioner of Patents & Trademarks
Washington, DC 20231

Sir:

INFORMATION DISCLOSURE STATEMENT
SUPPORTING PETITION TO MAKE SPECIAL

The following detailed discussion of the references listed on the attached Form PTO-1449 particularly points out how the claimed subject matter is distinguished over the references. One copy of each of the references listed on the Form PTO-1449 is submitted herewith.

The article entitled "Passive Location of Mobile Cellular Telephone Terminals" discusses the need for a method of locating a moving or stationary mobile cellular telephone. In particular, this paper discloses the basic concepts of determining range information from the phase of SAT signals or the RF signal amplitude, and determining angles of arrival by an interferometric approach. This paper fails to disclose sufficient detail to enable one to produce a working system. Moreover, this paper lacks disclosure of the concept of monitoring control channels to obtain data from which the locations of mobile

cellular telephones are determined. Furthermore, this paper lacks disclosure of the claimed apparatus and methods for obtaining location information from the weak, short duration control channel signals. For example, this article neither discloses nor suggests a cellular telephone location system comprising (see applicants' claim 1):

(a) at least three cell site systems, each cell site system comprising: an elevated ground-based antenna; a baseband convertor operatively coupled to said antenna for receiving cellular telephone signals transmitted over a control channel by said cellular telephones and providing baseband signals derived from the cellular telephone signals; a timing signal receiver for receiving a timing signal common to all cell sites; and a sampling subsystem operatively coupled to said timing signal receiver and said baseband convertor for sampling said baseband signal at a prescribed sampling frequency and formatting the sampled signal into frames of digital data, each frame comprising a prescribed number of data bits and time stamp bits, said time stamp bits representing the time at which said cellular telephone signals were received; and

(b) a central site system operatively coupled to said cell site systems, comprising: means for processing said frames of data from said cell site systems to generate a table identifying individual cellular telephone signals and the differences in times of arrival of said cellular telephone signals among said cell site systems; and means for determining, on the basis of said times of arrival differences, the locations of the cellular telephones responsible for said cellular telephone signals.

U.S. Patent No. 5,008,679 (Effland et al.) discloses a satellite-based system for locating an interfering transmitter. This patent lacks any disclosure related to cellular telephones; moreover, it fails to teach or suggest the desirability of locating a cellular telephone.

U.S. Patent No. 4,740,792 (Sagey) discloses a satellite-based vehicle location system including vehicle-mounted radio frequency transmitters and elevated (satellite-based) relay stations that receive transmitted signals from the vehicle-mounted transmitters and relay such signals to a central processing station. The central processing station separates the

relayed signals from one another and encodes the time of arrival at the processing station onto the received signals and then determines from time differences of arrival the location of the associated transmitters. The means for separating the relayed signals from one another include means for correlating the synchronization data encoded into the synchronization symbol of each signal with a corresponding stored code to enable the system to identify the beginning of individual signals. Applicants respectfully note that his patent fails to teach or suggest a ground-based system locating cellular telephones as described in applicants' claims. In particular, there is no teaching or suggestion of monitoring control channel transmissions or of the claimed apparatus and methods to achieve such monitoring. It should be noted that Sagey discloses correlating the synchronization data encoded into each signal with a corresponding stored code. Applicants respectfully submit that this disclosure of correlating a synchronization code with a stored code does not teach or suggest applicants' claimed system which, in preferred embodiments (see claim 3), cross-correlates a frame of data corresponding to one cell site with corresponding (in terms of time) frames of data from each other cell site.

U.S. Patent No. 5,023,900 (Tayloe) discloses a system for diagnosing a cellular radio telephone system. This patent does not disclose or suggest a system for locating cellular telephones. U.S. Patent No. 5,095,500 is a continuation of U.S. Patent No. 5,023,900.

U.S. Patent No. 5,166,694 (Russell et al.) discloses a vehicle location system that processes time of arrival signals to produce a geometric dilution of precision (GDOP) table at periodic intervals. Time of arrival signals are then prefiltered to determined an

optimum subset of data for further processing. This patent neither teaches nor suggests a system for locating cellular telephones by monitoring control channels, nor does it teach or suggest the apparatus and methods recited in applicants' claims.

U.S. Patent No. 5,003,317 (Gray et al.) discloses a stolen vehicle recovery system employing direction-finding (DF) to measure the bearing from each receiver to a stolen vehicle. This patent fails to teach or suggest a cellular telephone location system employing control channel signals to determine the locations of mobile cellular telephones.

U.S. Patent No. 4,870,422 (Counselman, III) discloses a system for determining a baseline vector between a pair of survey marks on the ground by radio interferometry using radio signals broadcasts from satellites. This patent fails to teach or suggest a cellular telephone location system.

U.S. Patent No. 4,791,572 (Green, III et al.) discloses a method for displaying positional information on a map. This patent does not teach or suggest a system for locating a cellular telephone.

U.S. Patent No. 4,177,466 (Reagan) discloses an auto theft detection system that employs a measurement of signal strength or, alternatively, a radio direction finder signal. This patent neither teaches nor suggests a system for locating cellular telephones.

U.S. Patent No. 4,651,157 (Gray et al.) discloses a system for locating a vehicle. The system employs an on-board security system that includes a LORAN-C receiver and a two-way full duplex transmitting radio in communication with a central station. This patent neither teaches nor suggests a system for locating cellular telephones by monitoring control channels, nor does it teach or suggest the apparatus and methods recited

in applicants' claims.

U.S. Patent No. 4,742,357 (Rackley) discloses a radio location system employing a network of receivers, a base station, and an object unit associated with the object to be located. The object unit receives locate request messages and echo pulses transmitted by the base station. In addition, the object unit has a variable frequency transmitter for transmitting messages and relaying the received echo pulses. This patent neither discloses nor suggests a system for locating cellular telephones by monitoring control channels, nor does it teach or suggest the apparatus and methods recited in applicants' claims.

U.S. Patent No. 4,926,161 (Cupp) discloses a method for avoiding slow play on a golf course. The disclosed method includes monitoring the location of golf course carts as they travel through a golf course. This patent lacks disclosure of a system for locating cellular telephones.

U.S. Patent Nos. 4,818,998 and 4,908,629 (Apsell et al.) disclose a vehicle location system which employs transponder- or transceiver-equipped stolen vehicles and appropriately-equipped police direction-finding tracking vehicles. The tracking vehicles "home in" on periodical transponder reply radio transmissions activated by command activation signals. These patents neither disclose nor suggest a system for locating cellular telephones by monitoring control channels.

U.S. Patent No. 4,728,959 (Maloney) discloses a system for locating a mobile radio transmitter located in a service area of a cellular telephone system. In particular, the disclosed system employs phase angle measurements indicative of the angle of direction of a

mobile transmitter from each of a plurality of land stations and processes theses phase angle measurements to locate the mobile transmitter. The phase angle measurements are obtained by translated Hilbert transformations and are processed to produce a probability density function. The probability density functions are combined after a Chi-squared analysis to produce an area of uncertainty representing the position of the mobile transmitter. Processing units at the land stations determine complex phaser relationships between the antenna elements that represent the conjugate product of the signals in the two antenna elements corresponding to the phase of the radio signals in each antenna element and the direction angle to the mobile transmitter from the land station. This patent lacks any disclosure or suggestion of an apparatus or method for determining the location of a mobile cellular telephone by monitoring control channel transmissions.

U.S. Patent No. 4,651,156 (Martinez) discloses a radio location system comprising a single broadcast station and two fixed receivers. According to the disclosed system, hand-held or vehicle-borne radio locator-transmitter devices transmit their positions and identities to the centrally located fixed receivers. Each of the locator transmitter devices is continuously phase-locked to the RF carrier broadcast by a nearby broadcast station. This patent lacks any disclosure or suggestion of an apparatus or method for determining the location of a mobile cellular telephone by monitoring control channel transmissions.

U.S. Patent No. 4,891,650 (Sheffer) discloses a system for locating a selected vehicle from which an alarm signal is generated. The disclosed system includes a fixed array of cellular sites each having signal detecting and generating units capable of receiving an input alarm signal having a signal strength which is a function of the distance between the

vehicle generating the alarm signal and the signal-detecting unit. The alarm signal includes a pulse signal which identifies the subscriber or the vehicle. U.S. Patent No. 5,055,851 is a continuation of U.S. Patent No. 4,891,650. Neither of these patents disclose or suggest monitoring control channel transmissions.

U.S. Patent No. 4,596,988 (Wanka) discloses a tracking system that, when interrogated, reports the location of a missing article. The disclosed system employs a concealed radio receiver 12 coupled to a trackable transmitter 14, and a network of remote receiving stations 18. The remote receiving stations each contain an automatic direction finder (ADF). The receiving stations 18 each receive a signal from the hidden transmitter and determine the bearing relative to the location of the individual receiving station, and transmit this bearing information via a modem to a base station 22. This patent lacks any disclosure or suggestion of an apparatus or method for determining the location of a mobile cellular telephone by monitoring control channel transmissions.

U.S. Patent No. 4,433,335 (Wind) discloses a system for determining the location of a transmitter. The disclosed system comprises at least two spaced receivers for receiving electromagnetic signals from the transmitter to be located and means for Fourier transforming the received signals and representing the transformed signals as complex functions of frequency. A complex division of pairs of the signals is performed to obtain signals represented by the phase differences between pairs of signals as functions of frequency. The difference in phase between pairs of signals as a function of frequency is employed to determine the time differences existing between the same pairs of functions. From these time differences, the position of the transmitter is determined. This patent lacks

any disclosure or suggestion of an apparatus or method for determining the location of a mobile cellular telephone by monitoring control channel transmissions.

U.S. Patent No. 5,023,809 (Spackman et al.) discloses a system that tracks the position of a vehicle in which an oscillator/transmitter pair is positioned. At least three translators receive the signals transmitted from the target and each retransmits the signal to a base receiving station. The base receiving station also receives the signal sent from the target and compares each of the signals received from the translator with the signal sent directly from the target. The output of the comparator purportedly provides an indication of the position of the target relative to the base receiving station. This patent lacks any disclosure or suggestion of an apparatus or method for determining the location of a mobile cellular telephone by monitoring control channel transmissions.

U.S. Patent No. 3,384,891 (Anderson) discloses a radio navigation system employing satellites or aircraft.

U.S. Patent No. 4,975,710 (Baghdady) discloses a system for performing direction of arrival (DOA) measurements. The disclosed system employs long-baseline, phase-difference, paired-antenna interferometry and DOA-computing array processing algorithms.

U.S. Patent No. 4,888,593 (Friedman et al.) discloses a system employing cyclic cross-correlation to perform direction-finding on a radio signal modulated by a digital signal and existing in a heavy interference environment.

U.S. Patent No. 4,297,701 (Henriques) discloses a range finding system for use on a golf course.

U.S. Patent No. 4,797,679 (Cusdin et al.) discloses a system for determining the direction of incidence of signals from a distant source. In particular, the patent is directed to providing an improved short-baseline time difference of arrival direction-finding system.

U.S. Patent No. 4,639,733 (King) discloses an interferometer-type direction finding system employing an array of five antennas arranged, respectively, at the apices of a regular pentagon.

U.S. Patent No. 4,638,321 (Drogin) discloses a wide baseline interferometer employing a pair of receivers 42, 44 and a common local oscillator 46.

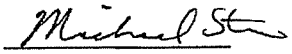
These patents lack any disclosure or suggestion of a system or method for locating mobile cellular telephones by monitoring control channel signals and processing such signals to obtain location information. As discussed in applicants' specification, there are numerous advantages provided by monitoring control channels to track the locations of cellular telephones. First, a voice channel is an expensive and relatively scarce resource. Cellular systems typically require approximately six to eight seconds to allocate a voice channel to a specific telephone. If voice channels were employed for location tracking, the cellular telephone would have to be called and commanded to initiate a voice channel call every time a location sample were to be taken. This would be both expensive and time consuming. Thus, it would be extremely inefficient for a location system to require the telephone to initiate periodic voice channel transmissions. Second, each voice channel transmission adds a call record in an associated billing system. Therefore, a large burden would be placed on the billing system if the location system were to require periodic voice

channel transmissions. In contrast, control channel transmissions already occur periodically in cellular systems. Thus, the present invention is compatible with existing cellular telephone protocols and would not require the cellular system or the individual cellular telephones to be modified. Third, since the frequency of control channel transmissions is software controllable, a location system in accordance with the present invention could control the frequency of control channel transmissions and offer different subscribers different location information update rates. Fourth, another advantage afforded by monitoring control channel transmissions is in connection with energy efficiency. Control channel transmissions are very short and require little power in comparison to voice channel transmissions. Accordingly, requiring periodic voice channel transmissions would cause a significant battery drain in the individual cellular telephones. This is avoided by monitoring control channels.

For all of the foregoing reasons, applicants' respectfully submit that the claimed subject matter is patentable over the prior art.

Respectfully submitted,

Date: May 3, 1993



Signature
Michael D. Stein
Registration No. **34,734**

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Sheet 1 of 3

Form PTO-1449 Modified List of Patents and Publications Cited by Applicant (Use several sheets if necessary) U.S. Department of Commerce Patent and Trademark Office	Docket No. ACOM-0001	Serial No. 08/059248
	Applicant Louis A. Stilp et al.	
	Filing Date Herewith	Group 2702

U. S. PATENT DOCUMENTS

Examiner Initial		Document No.	Date	Name	Class	Subclass
gs	AA	3,384,891	5/21/68	Anderson	343	6.5
gs	AB	4,177,466	12/4/79	Reagan	343	112 TC
gs	AC	4,297,701	10/27/81	Henriques	343	6.5 LC
gs	AD	4,433,335	2/21/84	Wind	343	463
gs	AE	4,596,988	6/24/86	Wanka	343	457
gs	AF	4,638,321	1/20/87	Drogin	342	444
gs	AG	4,639,733	1/27/87	King et al.	342	424
gs	AH	4,651,156	3/17/87	Martinez	342	457
gs	AI	4,651,157	3/17/87	Gray et al.	342	457
gs	AJ	4,728,959	3/1/88	Maloney et al.	342	457

FOREIGN PATENT DOCUMENTS

Examiner Initial		Document No.	Date	Country	Translation Yes	Translation No
	AK					
	AL					
	AM					
	AN					
	AO					

EXAMINER Gregory La Luong DATE CONSIDERED 9-20-93

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Sheet 2 of 3

Form PTO-1449 Modified	Docket No. XCOM-0001	Serial No. 08/059,248
List of Patents and Publications Cited by Applicant (Use several sheets if necessary)	Applicant Louis A. Stilp et al.	
U.S. Department of Commerce Patent and Trademark Office	Filing Date Herewith	Group 2207

U. S. PATENT DOCUMENTS

Examiner Initial		Document No.	Date	Name	Class	Subclass
gs	AA	4,740,792	4/26/88	Sagey et al.	342	457
gs	AB	4,742,357	5/3/88	Rackley	342	463
gs	AC	4,791,572	12/13/88	Green, III et al.	364	449
gs	AD	4,797,679	1/10/89	Cusdin et al.	342	387
gs	AE	4,818,998	4/4/89	Apsell et al.	342	44
gs	AF	4,870,422	9/26/89	Counselman, III	342	357
gs	AG	4,888,593	12/19/89	Friedman et al.	342	387
gs	AH	4,891,650	1/2/90	Sheffer	342	457
gs	AI	4,908,629	3/13/90	Apsell et al.	342	457
gs	AJ	4,926,161	5/15/90	Cupp	340	572

FOREIGN PATENT DOCUMENTS

Examiner Initial		Document No.	Date	Country	Translation Yes	Translation No
	AK					
	AL					
	AM					
	AN					
	AO					

EXAMINER Gregory R. Sieving DATE CONSIDERED 9-20-93

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Sheet 3 of 3

Form PTO-1449 Modified List of Patents and Publications Cited by Applicant (Use several sheets if necessary) U.S. Department of Commerce Patent and Trademark Office	Docket No. ACOM-0001	Serial No. 08/059248
	Applicant Louis A. Stilp et al.	
	Filing Date Herewith	Group 2702

U. S. PATENT DOCUMENTS

Examiner Initial		Document No.	Date	Name	Class	Subclass
gs	AA	4,975,710	12/4/90	Baghdady	342	442
gs	AB	5,003,317	3/26/91	Gray et al.	342	457
gs	AC	5,008,679	4/16/91	Effland et al.	342	353
gs	AD	5,023,809	6/11/91	Spackman et al.	364	516
gs	AE	5,023,900	6/11/91	Tayloe et al.	379	32
gs	AF	5,055,851	10/8/91	Sheffer	342	457
gs	AG	5,095,500	3/10/92	Tayloe et al.	379	32
gs	AH	5,166,694	11/24/92	Russell et al.	342	457
	AI					
	AJ					

FOREIGN PATENT DOCUMENTS

Examiner Initial		Document No.	Date	Country	Translation Yes	Translation No
	AK					
	AL					
	AM					
	AN					
	AO					

EXAMINER Gregory C. Lewis DATE CONSIDERED 9-20-93

K:\U\FORMS\IDS\PTO-1449.PAT

A125

TPI0021618

#9

Sheet 1 of 1

Form PTO-1449 Modified List of Patents and Publications Cited by Applicant (Use several sheets if necessary) U.S. Department of Commerce Patent and Trademark Office	Docket No. ACOM-0001	Serial No. Not Yet Assigned
	Applicant Louis A. Stilp et al.	
	Filing Date Herewith	Group 2702

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

gn	AA	Smith, William W., "Passive Location of Mobile Cellular Telephone Terminals," IEEE, 1991, pp. 221-225
	AB	
	AC	
	AD	
	AE	
	AF	
	AG	
	AH	
	AI	

EXAMINER Gregory B. Sefcheck DATE CONSIDERED 9-20-93

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A126

TPI0021619

08/059248

DOCKET NO.: ACOM-0001

PATENT

Paper #3

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

Louis A. Stilp; Curtis A. Knight; John C. Webber

Serial No.: Not Yet Assigned Group Art Unit:

Filed: Herewith Examiner:

For: CELLULAR TELEPHONE LOCATION SYSTEM

Honorable Commissioner of
Patents and Trademarks
Washington, D.C. 20231

Dear Sir:

PETITION TO MAKE SPECIAL FOR NEW APPLICATION UNDER 37 C.F.R. 1.102 and MPEP 708.02, VIII

Pursuant to the provisions of 37 C.F.R. 1.102 and MPEP § 708.02, VIII, applicants hereby petition to make "special" the captioned new patent application.

Applicants believe that the claims in the new application are directed to a single invention. However, if the office determines that all claims presented are not obviously directed to a single invention, applicants will make an election without traverse as a prerequisite to the grant of a special status.

Applicants and the undersigned attorney have conducted a prior art search to determine the prior art most relevant to the claimed invention. The search involved electronic databases (Dialog and Lexis). Submitted herewith are copies of the references believed to be most closely related to the subject

060 PB 05/24/93 08059248 1 122 130.00 CK

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matter of applicants' claims, along with a Form PTO 1449 listing those references. In addition, accompanying this petition is a detailed discussion that particularly points out how the claimed subject matter is patentably distinguished over the references.

Attached is a check in the amount of $130 for the fee required by 37 C.F.R. § 1.17(i)(2). The Commissioner is hereby authorized to charge any additional fees associated with this petition, or to credit any overpayment thereof, to our Deposit Account No. 23-3050.

Respectfully submitted,

Michael Stein

Michael D. Stein
Registration No. 34,734

Date: 5-7-93

WOODCOCK WASHBURN KURTZ
MACKIEWICZ & NORRIS
One Liberty Place - 46th Floor
Philadelphia, PA 19103
(215) 568-3100

UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office
ASSISTANT SECRETARY AND COMMISSIONER
OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

July 13, 1993

#4

Applicant: LOUIS A. STILP
Serial Number: 08/059,248
Filed: 05/07/93
For: CELLULAR TELEPHONE LOCATION SYSTEM

PETITION TO MAKE SPECIAL
Accelerated Examination

This is in response to the petition filed May 7, 1993, requesting that the above identified application be granted Special status under 708.02, paragraph VIII of the M.P.E.P. and 37 CFR Section 1.102(c).

The petition has been considered and found to comply with all the requirements set forth under the above-noted section. Accordingly, the petition is granted.

SUMMARY: The petition is **GRANTED.**

Bobby R. Gray, Director
Patent Examining Group 260
Communications, Measuring, Testing
and Lamp/Discharge

ALBERT W. PRESTON, JR.
WOODCOCK, WASHBURN, KURTZ, MACKIEWICZ
AND NORRIS
One Liberty Place, 46th Floor
Philadelphia, PA 19103

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UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

SERIAL NUMBER	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
08/059,248	05/07/93	STILP	L ACOM0001

EXAMINER
ISSING,G

22M2/0924

ALBERT W. PRESTON, JR.
WOODCOCK, WASHBURN, KURTZ, MACKIEWICZ
AND NORRIS
ONE LIBERTY PLACE, 46TH FLOOR
PHILADELPHIA, PA 19103

ART UNIT	PAPER NUMBER
2202	5

DATE MAILED: 09/24/93

This is a communication from the examiner in charge of your application.
COMMISSIONER OF PATENTS AND TRADEMARKS

☑ This application has been examined ☐ Responsive to communication filed on _____ ☐ This action is made final.

A shortened statutory period for response to this action is set to expire 3 month(s), _____ days from the date of this letter.
Failure to respond within the period for response will cause the application to become abandoned. 35 U.S.C. 133

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

1. ☑ Notice of References Cited by Examiner, PTO-892.
2. ☑ Notice re Patent Drawing, PTO-948.
3. ☑ Notice of Art Cited by Applicant, PTO-1448.
4. ☐ Notice of Informal Patent Application, Form PTO-152.
5. ☐ Information on How to Effect Drawing Changes, PTO-1474.
6. ☐ _____

Part II SUMMARY OF ACTION

1. ☑ Claims 1-46 are pending in the application.
   Of the above, claims _____ are withdrawn from consideration.
2. ☐ Claims _____ have been cancelled.
3. ☐ Claims _____ are allowed.
4. ☑ Claims 1-3, 5, 12-20, 44 are rejected.
5. ☑ Claims 4, 6-11, 41-43 and 45 are objected to.
6. ☐ Claims _____ are subject to restriction or election requirement.
7. ☐ This application has been filed with informal drawings under 37 C.F.R. 1.85 which are acceptable for examination purposes.
8. ☐ Formal drawings are required in response to this Office action.
9. ☐ The corrected or substitute drawings have been received on _____. Under 37 C.F.R. 1.84 these drawings are ☐ acceptable. ☐ not acceptable (see explanation or Notice re Patent Drawing, PTO-948).
10. ☐ The proposed additional or substitute sheet(s) of drawings, filed on _____ has (have) been ☐ approved by the examiner. ☐ disapproved by the examiner (see explanation).
11. ☐ The proposed drawing correction, filed on _____, has been ☐ approved. ☐ disapproved (see explanation).
12. ☐ Acknowledgment is made of the claim for priority under U.S.C. 119. The certified copy has ☐ been received ☐ not been received ☐ been filed in parent application, serial no. _____; filed on _____.
13. ☐ Since this application appears to be in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11; 453 O.G. 213.
14. ☐ Other

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EXAMINER'S ACTION

PTOL-326 (Rev. 9-89)

TPI0021623

1. The following is a quotation of 35 U.S.C. 103 which forms the basis for all obviousness rejections set forth in this Office action:

> "A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.
>
> Subject matter developed by another person, which qualifies as prior art only under subsection (f) and (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person."

Claims 1-3, 5, 12-39 are rejected under 35 U.S.C. 103 as being unpatentable over Sagey in view of Song.

Sagey teaches the subject matter substantially as claimed including a plurality of cell cites 13, 20-26 receiving signals from multiple mobile cellular telephones 11-12, a regional location processing center 16 for receiving and processing time of arrival signals received from the cell cites in response to the location message 28 of a mobile cellular telephone, and subscriber interface means adapted for providing the computed location information to other subscribers. Sagey teaches the location message 28 being overlaid over the existing voice signals without sacrificing voice channel capacity or undue interference. Song teaches that it is well known in cellular telephone networks, which are combined with locating and tracking a cellular telephone, to initiate the location system using the signals transmitted on the control channels. Thus, it owuld have been obvious to one having ordinary skill in the art

ath the time the invention was made to modify Sagey by using a control channel signal to make a determination of the location rather than overlaying the voice channel with a spread spectrum signal in view of the teachings of Song who teaches the conventionality of such. Sagey sets forth use in vehicle location, messaging services, emergency SOS information and vehicle anti-theft services. Thus, the particulars of the data message of the claimed subject matter are obvious to one having ordinary skill in the art since merely the information transmitted is different.

2. The following is a quotation of the first paragraph of 35 U.S. 112:

> "The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention."

The specification is objected to under 35 U.S.C. 112, first paragraph, as failing to provide an enabling disclosure.

Claims 6 and 40 are not understood since it is not understood how the cross-correlation of the demodulated signal and reconstructed signal provide the time difference of arrival particularly since it is not clear how the reconstructed signal of the originally transmitted signal is determined.

Claims 6, 40 and 44 are rejected under 35 U.S.C. 112, first paragraph, for the reasons set forth in the objection to the specification.

3. Claims 4, 6-11, 41-43 and 45 are objected to as being dependent upon a rejected base claim, but would be allowable if

rewritten in independent form including all of the limitations of the base claim and any intervening claims.

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Anderson et al disclose a cellular telephone locating system using time difference of arrivals.

Fuller discloses a system for locating mobile surfaces using tone bursts.

Buhl et al disclose a system for locating a cellular telephone wherein the homw exchange includes a list of a plurality of possible exchanges in which the mobile subscriber may be located.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner **Gregory C. Issing** whose telephone number is (703)-308-0467. Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703)-308-0766.

Gregory C Issing

GREGORY C. ISSING
PRIMARY EXAMINER
ART UNIT 2202

PTO FORM 948
(REV. 7-92)

GROUP

U.S. DEPARTMENT OF COMMERCE
Patent and Trademark Office

ATTACHMENT TO PAPER NUMBER 5

APPLICATION NUMBER 059248

NOTICE OF DRAFTSPERSON'S PATENT DRAWING REVIEW

THE PTO DRAFTSMEN REVIEW ALL ORIGINALLY FILED DRAWINGS REGARDLESS OF WHETHER THEY WERE DESIGNATED AS INFORMAL OR FORMAL. ADDITIONALLY, THE PATENT EXAMINER WILL ALSO REVIEW THE DRAWINGS FOR COMPLIANCE WITH THE REGULATIONS.

The drawings filed 5/7/93

A. ☐ are approved by the draftsperson.

B. ☒ are objected to by the draftsperson under 37 CFR 1.84 for the reason(s) checked below. The examiner will require submission of new, corrected drawings at the appropriate time. Corrected drawings must be submitted according to the instructions listed on the back of this Notice.

1. Paper and ink. 37 CFR 1.84(a)

☐ Sheet(s) ____ Poor.

2. Size of Sheet and Margins. 37 CFR 1.84(b)

Acceptable Paper Sizes and Margins

	Paper Size		
Margin	8 1/2 by 14 inches	8 1/2 by 13 inches	DIN size A4 21 by 29.7 cm.
Top	2 inches	1 inch	2.5 cm.
Left	1/4 inch	1/4 inch	2.5 cm.
Right	1/4 inch	1/4 inch	1.5 cm.
X Bottom	1/4 inch	1/4 inch	1.0 cm.

☐ Proper Size Paper Required. All Sheets Must be Same Size.
Sheet(s) ____

☒ Proper Margins Required.
Sheet(s) 6

☐ TOP ☐ RIGHT

☐ LEFT ☐ BOTTOM

3. Character of Lines. 37 CFR 1.84(c)

☒ Lines Pale or Rough and Blurred.
Fig(s) 7a

☐ Solid Black Shading Not Allowed.
Fig(s) ____

4. ☐ Photographs Not Approved.

____

☐ Comments;

5. Hatching and Shading. 37 CFR 1.84(d)

☐ [illegible]
Fig(s)

☐ [illegible] Hatching Not Allowed.
Fig(s) ____

☐ Double Line Hatching Not Allowed.
Fig(s) ____

☐ Parts in Section Must be Hatched.
Fig(s) ____

6. Reference Characters. 37 CFR 1.84(f)

☒ Reference Characters Poor or Incorrectly Sized.
Fig(s) 7a

☐ Reference Characters Placed Incorrectly.
Fig(s) ____

7. Views. 37 CFR 1.84(i) & (j)

☒ Figures Must be Numbered Properly. 7a

☐ Figures Must Not be Connected.
Fig(s) ____

8. ☐ Identification of Drawings. 37 CFR 1.84(1) Extraneous Matter or Copy Machine Marks Not Allowed. Fig(s) ____

9. ☐ Changes Not Completed from Prior PTO-948 dated ____

Telephone inquires concerning this review should be directed to the Chief Draftsperson at telephone number (703) 305-[illegible]

T. Rogers
Reviewing Draftsperson

6/23/93
Date

Note: Any objection to the drawings made by the examiner will be communicated separately in an office action.

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CONFIDENTIAL
TruePosition, Inc. v. Andrew Corp.
Civil Action No. 05-00747-SLR

TPI0021627

TO SEPARATE, HOLD TOP AND BOTTOM EDGES, SNAP--APART CARD CARBON

FORM PTO-892 (REV. 3-78) U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE	SERIAL NO.	GROUP ART UNIT	ATTACHMENT TO PAPER NUMBER
NOTICE OF REFERENCES CITED	08/059,248	2202	5
	APPLICANT(S) STILP ET AL		

U.S. PATENT DOCUMENTS

*		DOCUMENT NO.	DATE	NAME	CLASS	SUB-CLASS	FILING DATE IF APPROPRIATE
	A	5,218,618	6-1993	SAGEY	342	457	11-1990
	B	5,208,756	5-1993	SONG	364	449	1-1991
	C	5,153,902	10-1992	BUHL ET AL	379	60	
	D	3,681,121	7-1972	ANDERSON ET AL	342	357	
	E	3,646,580	2-1972	FULLER ET AL	342	457	
	F						
	G						
	H						
	I						
	J						
	K						

FOREIGN PATENT DOCUMENTS

*		DOCUMENT NO.	DATE	COUNTRY	NAME	CLASS	SUB-CLASS	PERTINENT SHTS. DWG	PERTINENT PP. SPEC.
	L								
	M								
	N								
	O								
	P								
	Q								

OTHER REFERENCES (Including Author, Title, Date, Pertinent Pages, Etc.)

R	
S	
T	
U	

EXAMINER	DATE
Gregory P. Sefing	9-7-93

* A copy of this reference is not being furnished with this office action.
(See Manual of Patent Examining Procedure, section 707.05 (a).)

A135

TPI0021628

PATENT 10/12/93

DOCKET NO.: ACOM-001

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

Louis A. Stilp, et al.

Serial No.: 08/059,248 Group Art Unit: 2202

Filed: May 7, 1993 Examiner: G. Issing

For: CELLULAR TELEPHONE LOCATION SYSTEM

CERTIFICATE OF FACSIMILE TRANSMISSION

I hereby certify that this paper is being facsimile transmitted to the Patent and Trademark Office on the date shown below.

Michael D. Stein
Type or print name of person signing certification

Signature Date 10-5-93

Honorable Commissioner of
Patents and Trademarks
Washington, D.C. 20231

Dear Sir:

AMENDMENT

In response to the Office Action dated September 24, 1993, please amend the application as follows.

IN THE CLAIMS

1. (Amended) A cellular telephone location system for determining the locations of multiple mobile cellular telephones each initiating periodic signal transmissions over one of a prescribed set of reverse control channels, comprising:

(a) at least three cell site systems, each cell site system comprising: an elevated ground-based antenna; a baseband convertor operatively coupled to said antenna for receiving cellular telephone signals transmitted over a reverse control channel by said cellular telephones and providing baseband signals derived from the cellular telephone signals; a timing signal receiver for receiving a timing signal common to all cell sites; and a sampling subsystem operatively coupled to said

DOCKET NO.: ACOM-001 PATENT

timing signal receiver and said baseband convertor for sampling said baseband signal at a prescribed sampling frequency and formatting the sampled signal into frames of digital data, each frame comprising a prescribed number of data bits and time stamp bits, said time stamp bits representing the time at which said cellular telephone signals were received; and

(b) a central site system operatively coupled to said cell site systems, comprising: means for processing said frames of data from said cell site systems to generate a table identifying individual cellular telephone signals and the differences in times of arrival of said cellular telephone signals among said cell site systems; and means for determining, on the basis of said times of arrival differences, the locations of the cellular telephones responsible for said cellular telephone signals.

---

22. (Amended) A ground-based cellular telephone system serving a plurality of subscribers possessing mobile cellular telephones, comprising:

(a) at least three cell sites equipped to receive signals sent by multiple mobile cellular telephones each initiating periodic signal transmissions over one of a prescribed set of reverse control channels;

(b) locating means for automatically determining the locations of said cellular telephones by receiving and processing signals emitted during said periodic reverse control channel transmissions; and

(c) database means for storing location data identifying the cellular telephones and their respective locations, and for providing access to said database to subscribers at remote locations.

31. (Amended) A method for determining the location(s) of one or more mobile cellular telephones periodically transmitting signals over one of a prescribed set of reverse control channels, comprising the steps of:

(a) receiving said reverse control channel signals at at least three geographically-separated cell sites;

(b) processing said signals at each cell site to produce frames of data, each frame comprising a prescribed number of data bits and time stamp bits, said time stamp bits representing the time at which said frames were produced at each cell site;

(c) processing said frames of data to identify individual cellular telephone signals and the differences in times of arrival of said cellular telephone signals among said cell sites; and

(d) determining, on the basis of said times of arrival differences, the locations of the cellular telephones responsible for said cellular telephone signals.

32. (Amended) A method as recited in claim 31, further comprising the steps of storing, in a database, location data identifying the cellular telephones and their respective locations, and providing access to said database to subscribers at remote locations.

REMARKS

Claims 1-45 are pending in the application. Claims 1-3, 5, and 12-39 stand rejected under 35 U.S.C. § 103 as being directed to subject matter which is unpatentable over Sagey (U.S. Patent No. 5,218,618) in view of Song (U.S. Patent No. 5,208,756). Claims 6, 40, and 44 stand rejected under 35 U.S.C. § 112, first paragraph. Claims 4, 6-11, 41-43, and 45 have been declared by the Examiner to be allowable over the prior art. Claims 1, 23, 31, and 32 have been hereby amended. Reconsideration of the rejections under 35 U.S.C. §§ 103 and 112 is respectfully requested in view of the above amendment and the below remarks.

The Rejection Under 35 U.S.C. § 112, First Paragraph

Claims 6, 40, and 44 stand rejected (and the specification stands objected to) because, according the Office Action, "it is not understood how the cross-correlation of the demodulated signal and reconstructed signal provide the time difference of arrival particularly since it is not clear how the reconstructed signal of the original signal is determined." Applicants respectfully submit that the following explanation, which appears at pages 25-26 of the specification, would enable one skilled in the art to carry out the claimed invention.

> In method one, the cell site systems are of higher capital cost, but the communication links are of lower speed, for example, 56 Kbps, and therefore lower operational cost. Figure 7A schematically depicts this method ... In this method, cross-correlations are performed at the cell sites in the following manner. For each "strong" signal (e.g., signal "A") received on a particular control channel at a particular first cell site (where "strong" is at least several dB above the noise level), that strong signal is first applied to a signal decoder, such as that used by the cellular system itself. This decoder demodulates the cellular signal to produce the original digital bit stream which had been modulated to produce the cellular signal. If the decoder cannot demodulate the digital stream within allowable error thresholds, this strong signal is rejected as a starting point for the remaining part of this process. This digital bit stream is then modulated by the cell site system to reconstruct the original signal waveform as it was first transmitted by the cellular telephone. This reconstructed signal waveform is cross-correlated against the received signal at the first cell site. The

cross-correlation produces a peak from which an exact time of arrival can be calculated from a predetermined point on the peak.

The first cell site system then sends the demodulated digital bit stream and the exact time of arrival to the central site over the communications line. The central site then distributes the demodulated digital bit stream and the exact time of arrival to other cell sites likely to have also received the cellular transmission. At each of these other second, third, fourth, etc., cell sites, the digital bit stream is modulated by the cell site system to reconstruct the original signal waveform as it was first transmitted by the cellular telephone. This reconstructed signal waveform is cross-correlated against the signal received at each cell site during the same time interval. In this case, the same time interval refers to a period spanning several hundred to several thousand microseconds of time in either direction from the time of arrival of the strong signal at the first cell site. The cross-correlation may or may not produce a peak; if a peak is produced, an exact time of arrival can be calculated from a predetermined point on the peak. This exact time of arrival is then sent via the communications line to the central site, from which a delay difference for a particular pair of cell sites can be calculated. This method permits the cell site systems to extract time of arrival information from an extremely weak signal reception, where the weak signal may be above or below the noise level. In addition, cross-correlating at cell sites enables the cell site systems to detect a first leading edge of a cellular telephone signal and to reject subsequent leading edges caused by multipath. The value of this technique for reducing the effects of multipath will be appreciated by those skilled in the art. This method is applied iteratively to sufficient pairs of cell sites for each strong signal received at each cell site for each sample period. For any given

CERTIFICATE OF SERVICE

I, Francis DiGiovanni, hereby certify that on this 2nd day of February, 2007, I caused a true and correct copy of the foregoing **APPENDIX A TO TRUEPOSITION, INC.'S OPENING CLAIM CONSTRUCTION BRIEF PART 1 A1 – A141** to be served upon the following individuals in the manner indicated below:

Via hand-delivery
Josy W. Ingersoll, Esq.
Young Conaway Stargatt & Taylor, LLP
100 West Street, 17th Floor
Wilmington, DE 19801
jingersoll@ycst.com

Via e-mail
Patrick D. McPherson, Esq.
Duane Morris LLP
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/s/ Francis DiGiovanni
Francis DiGiovanni (# 3189)